

THE COOKE CITY MINES.

The Geological Formation of the Hills in Which Rich Discoveries are Being Made.

Vast Beds of Coal Adjacent, Which May Develop Into Anthracite Veins.

Hundreds and Hundreds of Mineral Locations, Some of Which Promise to be Great Mines—The Outlook.

The geology of a country governs the character of its mineral deposits. There are but few mines, save those of coal, iron and diamonds, far away from those disturbances and metamorphic agencies, which produce and accompany the formation of mountains. All the vast coal beds of Montana, so far as discovered, are away from the mountains or in the foot-hills where the rocks are not so fractured and metamorphosed as to produce veins of gold and silver. But should our coal veins extend into the mountains, where the heat was sufficient to metamorphose the rocks and produce mineral veins, they will be changed from bituminous coal to anthracite, as they are in the mountains of Pennsylvania, Colorado and British Columbia. Hence we may expect to find anthracite wherever our coal leads extend into the mountains; and prospectors will do well to look for anthracite where common coal is known to be in the foot-hills or valleys near the mountains.

Anthracite is simply a natural coke produced under great pressure by the heat, which metamorphosed the accompanying rocks. The vast coal beds north and east of Cooke City may extend into the mountains of this district and may yield the anthracite, or natural coke, so much needed in smelting its ores of gold, silver, lead, copper and iron. If this should prove true and anthracite beds be discovered in these mountains the cost of working these ores would be very much reduced.

But in the mountains and the adjacent regions, where the rocks have been fractured and metamorphosed, are the only places where we find productive mines of gold and silver. Any one can verify this statement by consulting the great mining regions and observing the relations to the mountain systems of the world.

Some mountains contain but little gold and silver, and even some parts of very productive ranges produce none of the precious metals. But nearly all mountain ranges yield some valuable materials for man's use. While the Ozark range has furnished no valuable minerals of gold and silver, they have vast deposits of iron, lead, zinc, copper, nickel, cobalt and marble. The northern part of the Alleghenies furnish large quantities of slate, marble and mica, the middle portions anthracite and iron, and the southern portions gold, mica, and marble.

Some have imagined that the most ancient rocks are the richest in the precious metals. But this is a mistake. While the iron mines of the Ozarks and Alleghenies are in the oldest rocks and mountains of the continent, and the anthracites of the Alleghenies are in mountains more recent, the gold and silver mines of the Rockies are in mountains comparatively new. The whole region of the Rockies, the Sierras and the Cascades, was under the Pacific ocean when the Alleghenies were formed.

So this whole region of the Rocky mountains and the Pacific slope, so rich in precious metals is as comparatively recent in the geological ages as its civilization is in the historical times.

The highest mountains about Cooke City present a feature which, though common in this part of the Rocky mountains is seldom seen in the mountains of the Atlantic coast. Mountain ranges and spurs and peaks usually appear as if the central and highest portions had been forced up through the horizontal surface strata, leaving the latter fractured, tilted and lying against the sides of the mountains. But in the highest mountains at Cooke City the central and highest peaks have been forced up through the horizontal surface rocks as above, but instead of tilting those strata they were lifted bodily to a height of some 8,000 or 10,000 feet and left in a horizontal position, as before they were disturbed by the forces which formed the mountains.

Another uncommon feature is quite obvious in these high mountains. The horizontal strata, which form the sides of the mountains are but little changed on their outer edges; but they are much more metamorphosed and fractured next to the basals and trachytes, which have been forced up and now form the central and highest portions of these peaks and ridges. Hence some of the best mines in these lofty mountains are high up in close proximity to the central basals and trachytes or ancient lavas. This is true of the Morning Star, Black Warrior, Homestead, Daisy, Elk, War Eagle and many other mines. This class of mines are in "disse" or "contact" veins.

Other mines in these mountains are what the miners call "disse" or "contact" veins. Others still appear to be irregular veins with vast pockets filled with ore, usually in or adjacent to the limestones.

Such is the geological structure of the high mountains known as Miller, Henderson, Woody, Republic, Sheep and Red mountains. These mountains are actually covered with hundreds and hundreds of mineral locations. Some have been so well developed as to show their value and prove them good mines; while the greater number have been but little worked and proved up.

At the head of Stillwater and Slough creeks are some low, rounded mountains or foothills, called granite ranges and Lame stone range, which contain many important mines. There are also large areas on the headwaters of Soda-Butte creek, Rocky Fork and Clark's Fork covered for the most part with low, rounded knobs and ranges, which have been but little explored, though some mines have been discovered. This is a promising region and will be prospected as soon as the railroad whistle starts the deer and the elk and the bear from these wild regions and promises cheap transportation. The picks are already sharpened, the shovels are bright and the donkey and cayuse are ready to pack the grub for the pioneer miners who shall develop these vast regions, whose mineral veins have not yet felt the blows of the prospectors, whose discoveries have covered the Pacific slope and filled these mountains with civilized states with a rapidity that surpasses all historical records and even the magic results of Aladdin's lamp.

The pioneer prospector may live in his log cabin, his tent or even his brush wick, but when the true history of western America is written, he will have a monument far more creditable than the marble palaces of the millionaires his discoveries have made, or the senators who represent the states his pick and shovel made possible.

Why does not the coat of arms of some state represent the pioneer prospector, his pack animal and his pick and shovel and brush wick?

While it was true that Comstock, who discovered the great bonanza of Nevada, died in poverty, his recovery will be far brighter and far more honorable than that of some, who coined millions from his discovery, and

built marble palaces in the capitals of the world, and who disgraced the American name by their ignorance, their shoddy follies and their vulgar crimes.

All honor to the pioneer prospector, many of whom are enjoying the fruits of their discoveries and are managing mercantile houses and banks and building railroads to enable other prospectors to reap the same benefits of their labors and discoveries.

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